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**Genome, Epigenome, and Environment Determine the Set
of All Possible Motivated Behaviors.**

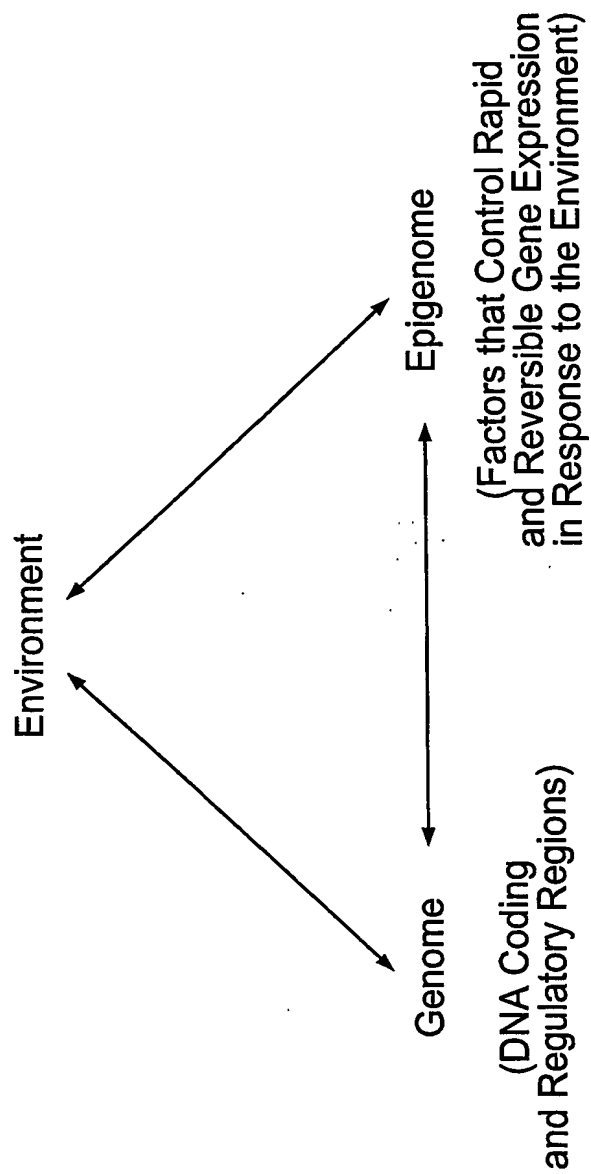


FIG. 1

**Systems Biology Acts as an Interface Between
the Environment and Genome/Epigenome.**

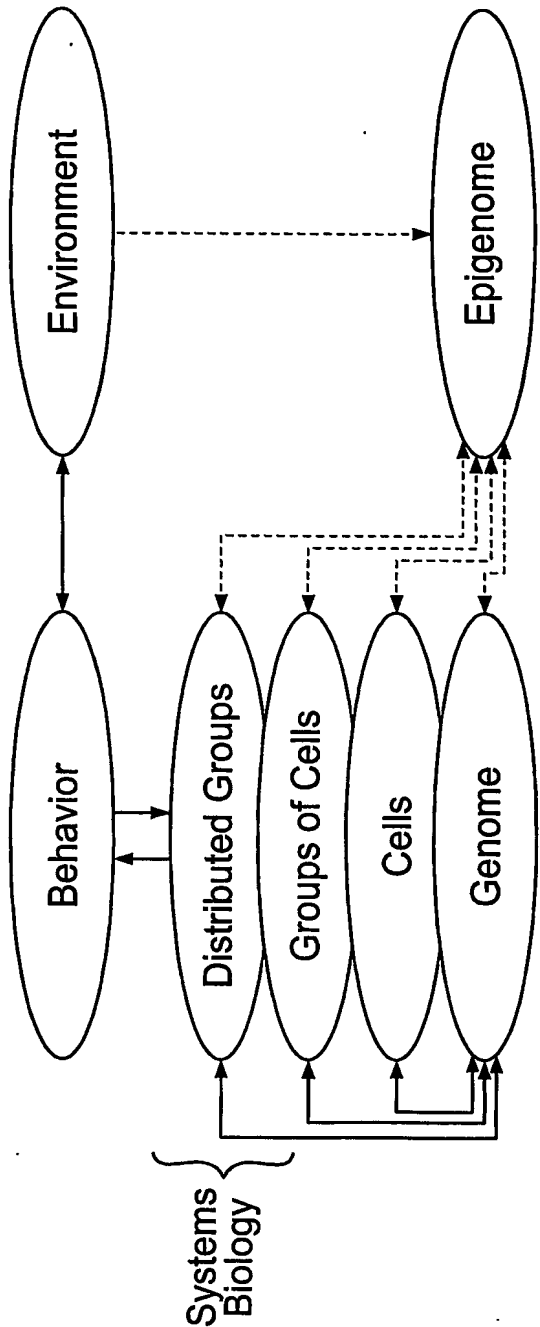


FIG. 2

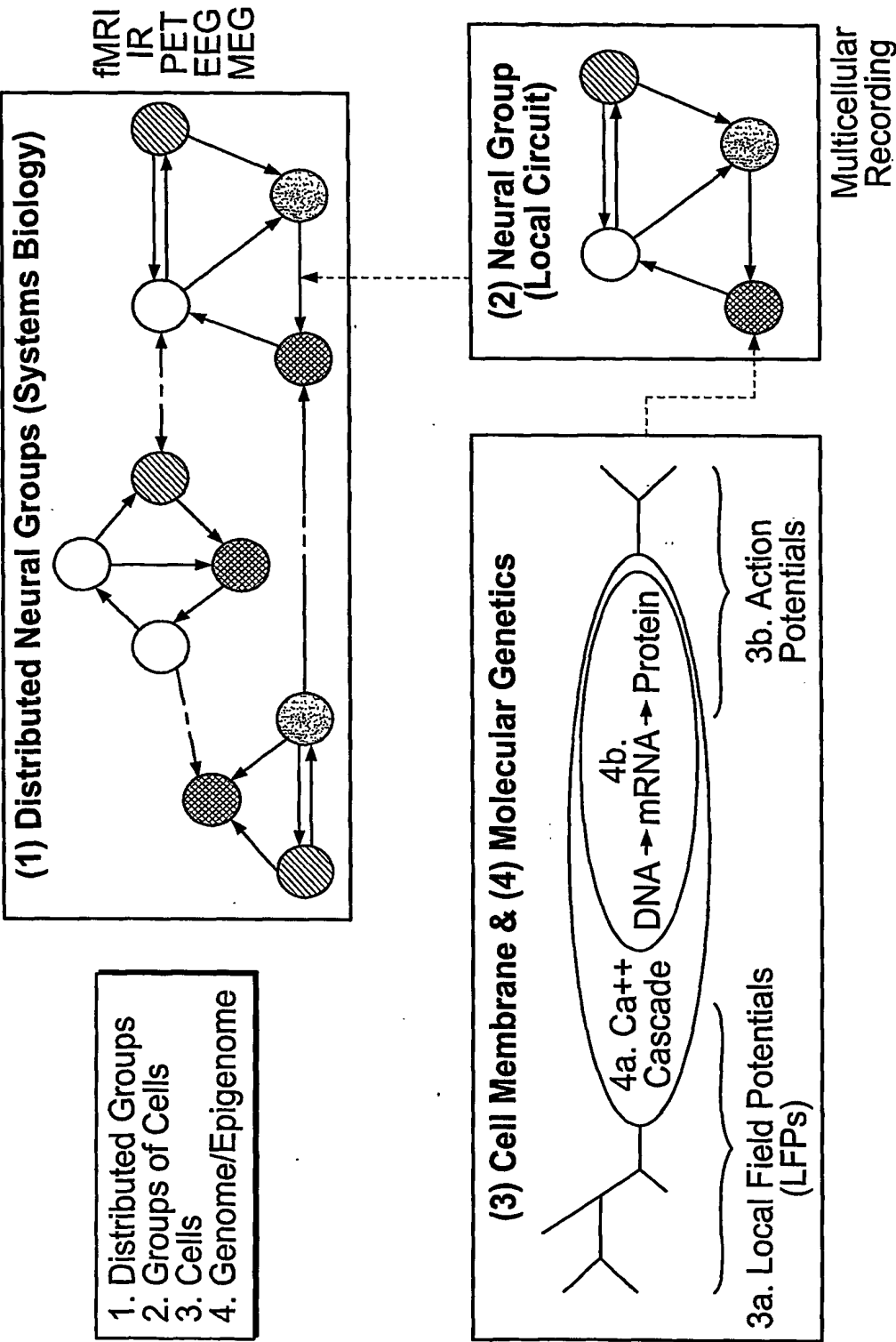


FIG. 3

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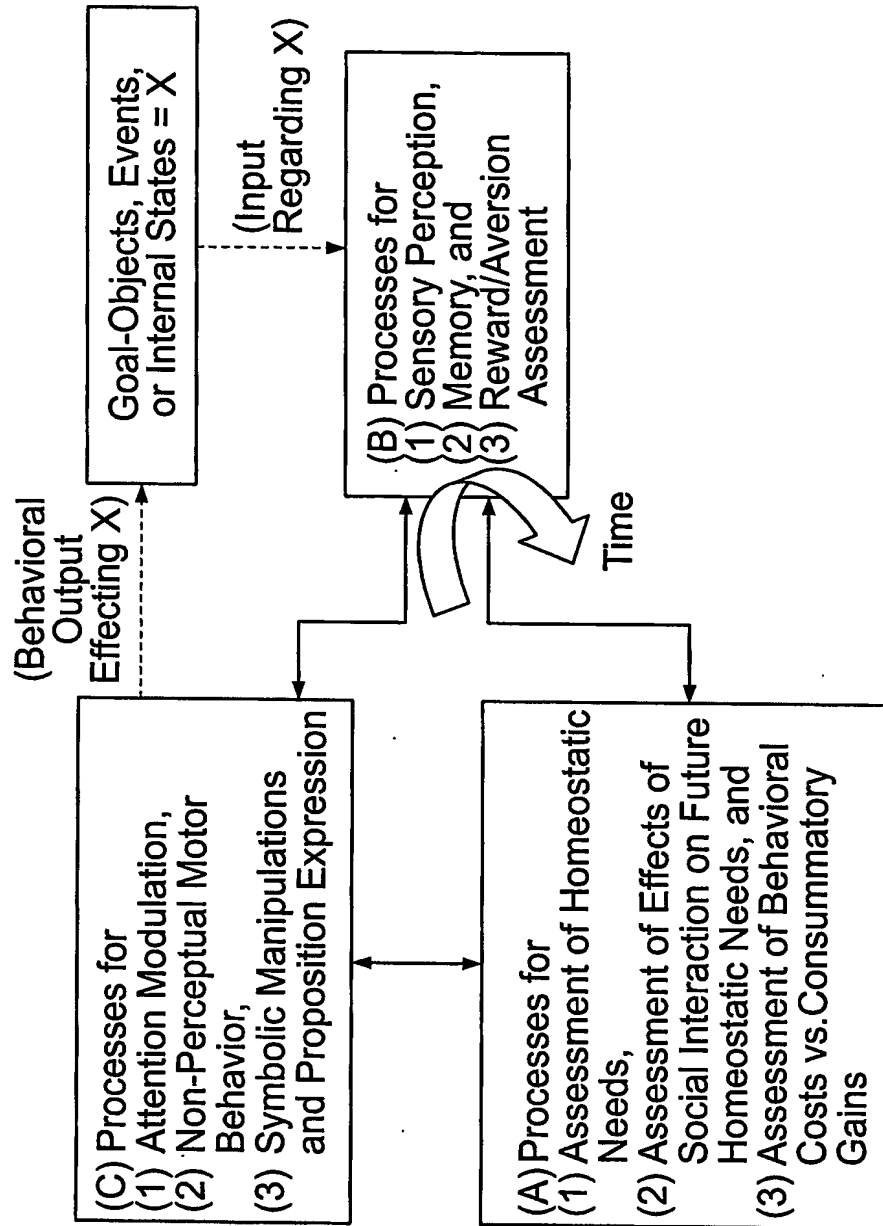
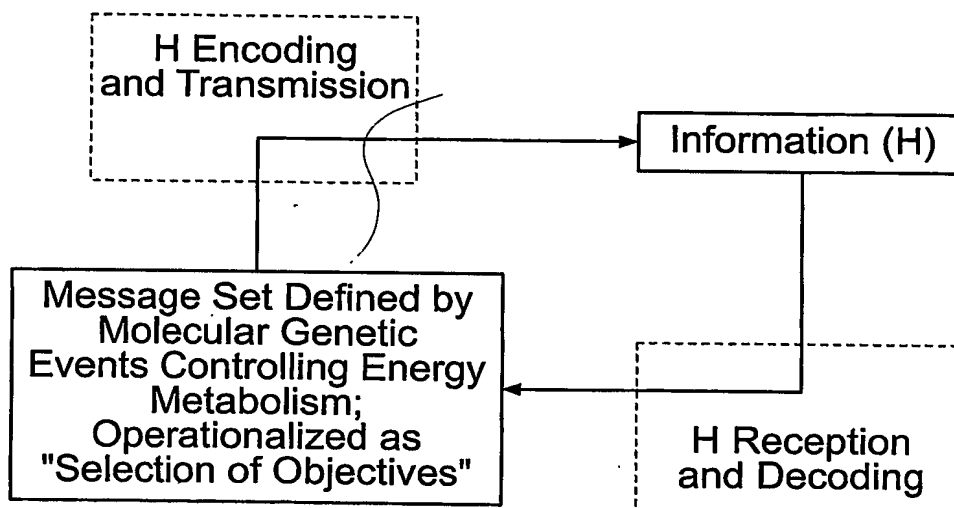
Cognitive Physiology Model

FIG. 4A

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Communication Theory Model**FIG. 4B**

Combined Model

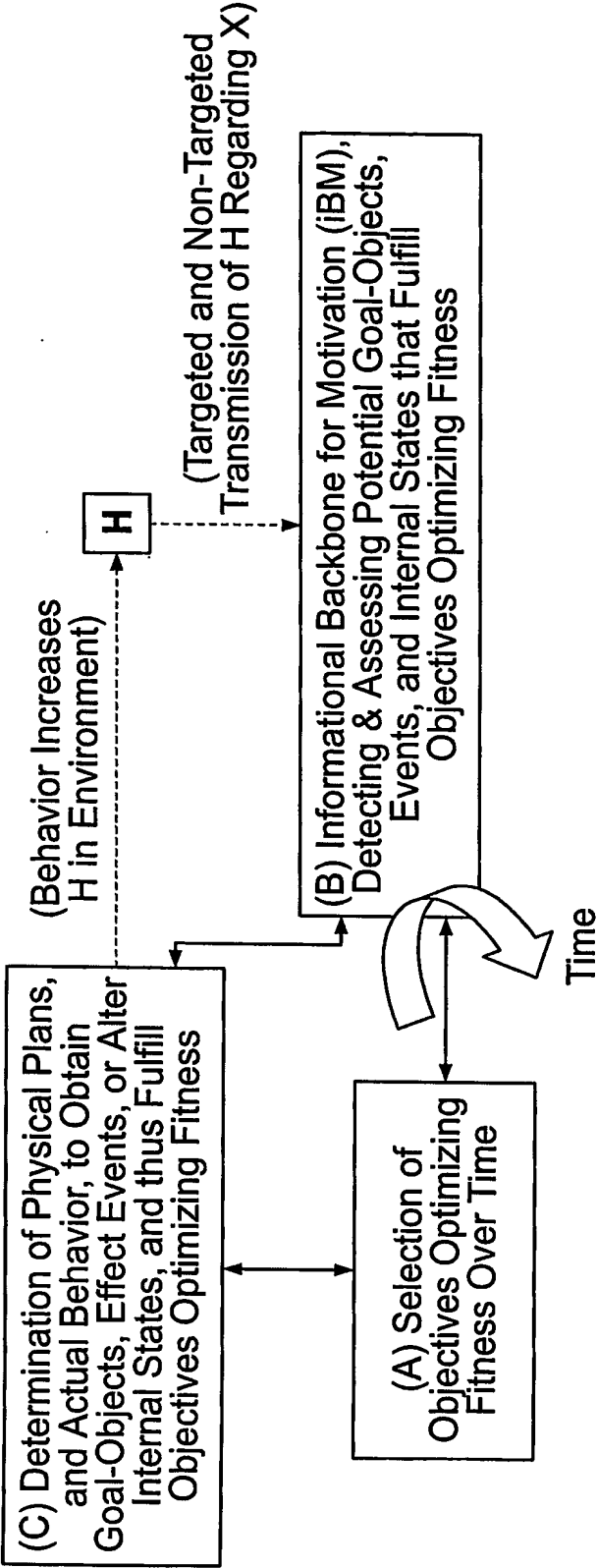


FIG. 4C

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20 → The Informational Backbone for Motivation (IBM)

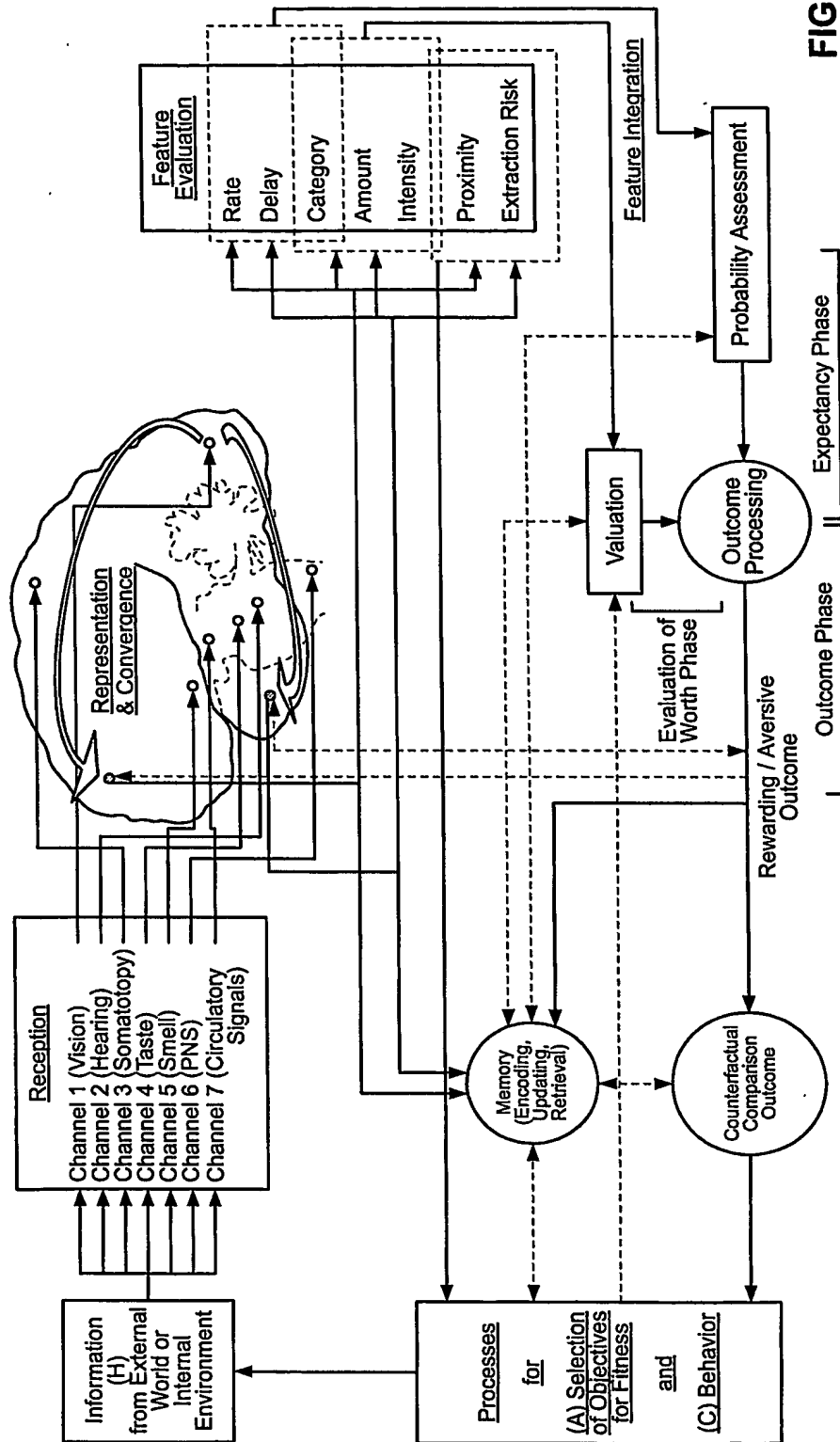


FIG. 5

Dissection of Combined Model
(a) Combined Model for Motivation:

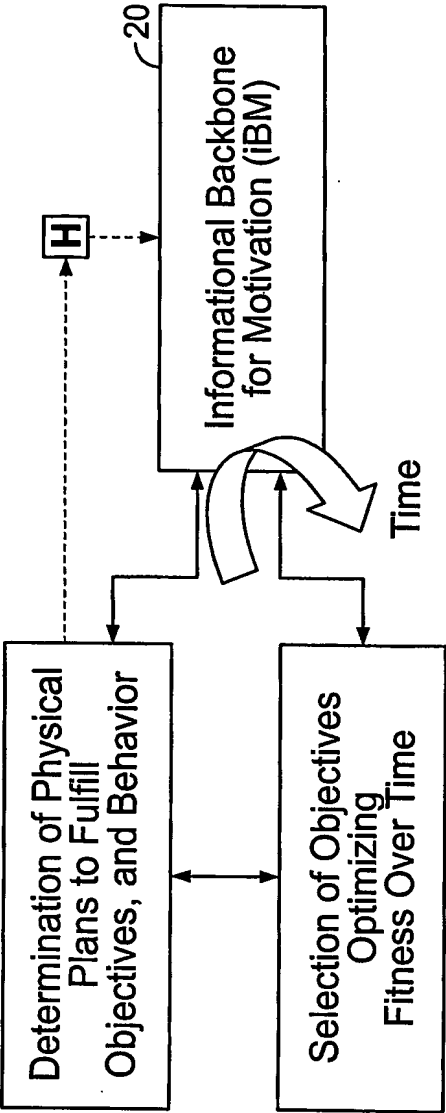


FIG. 6

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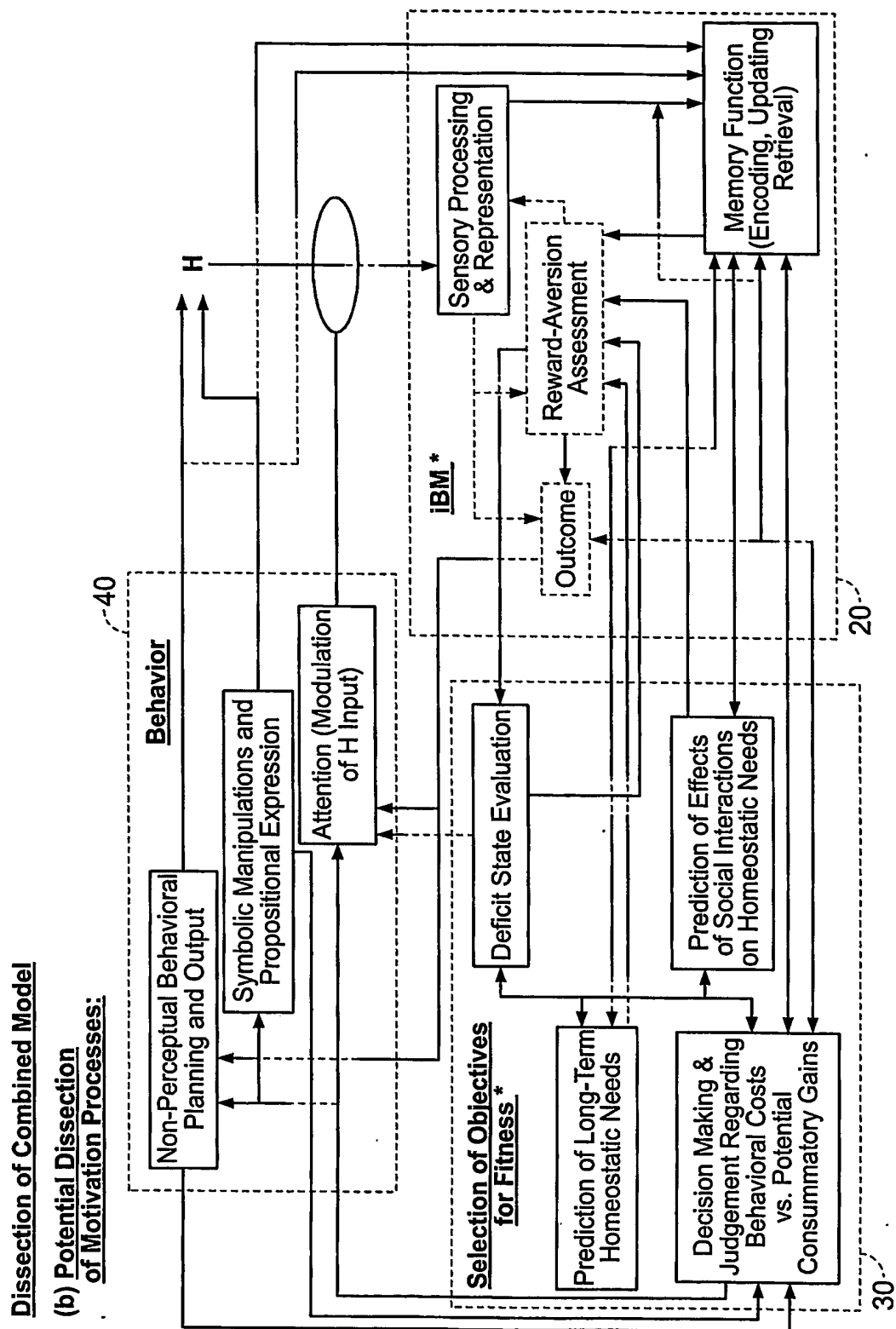


FIG. 7

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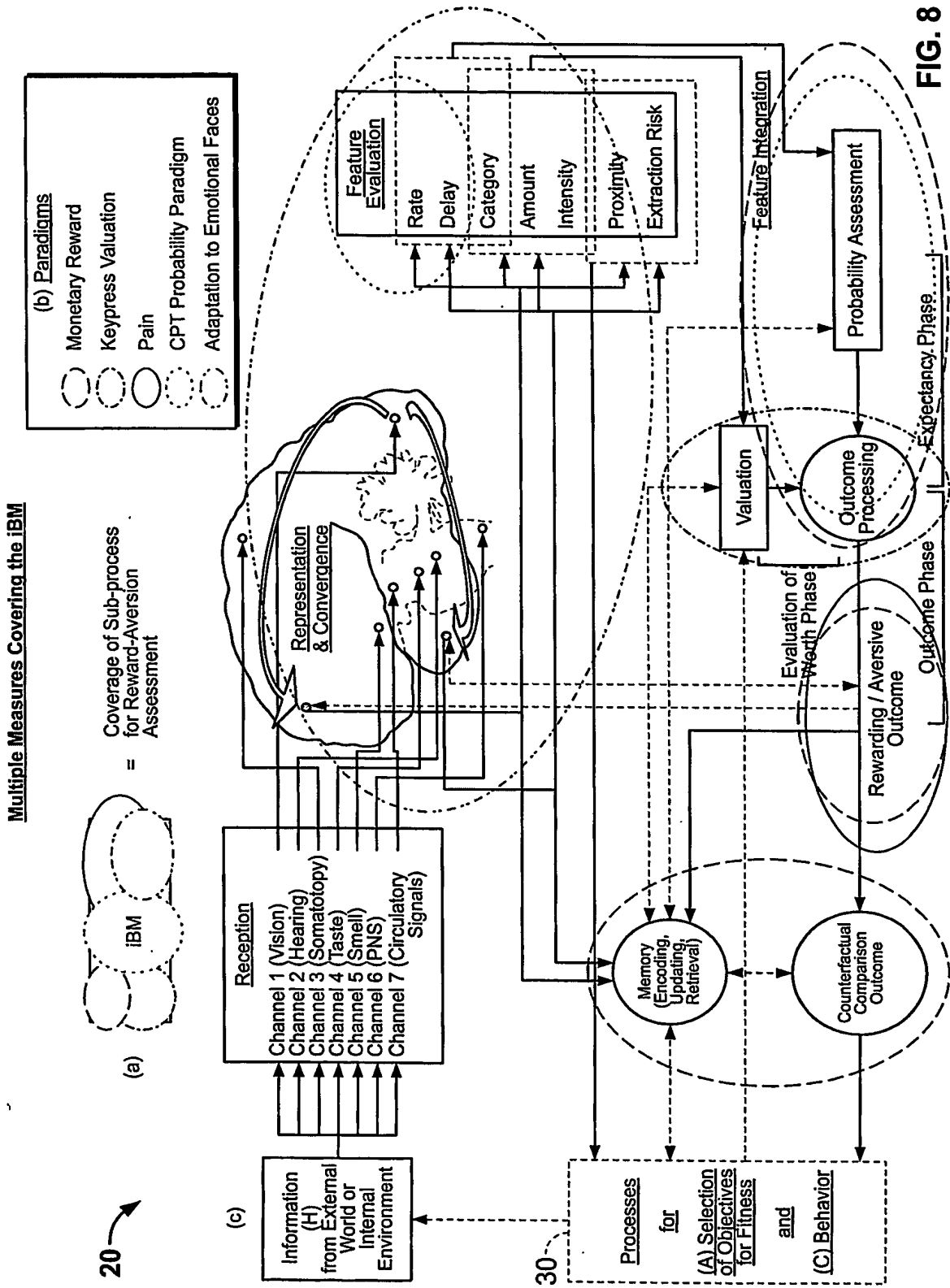


FIG. 8

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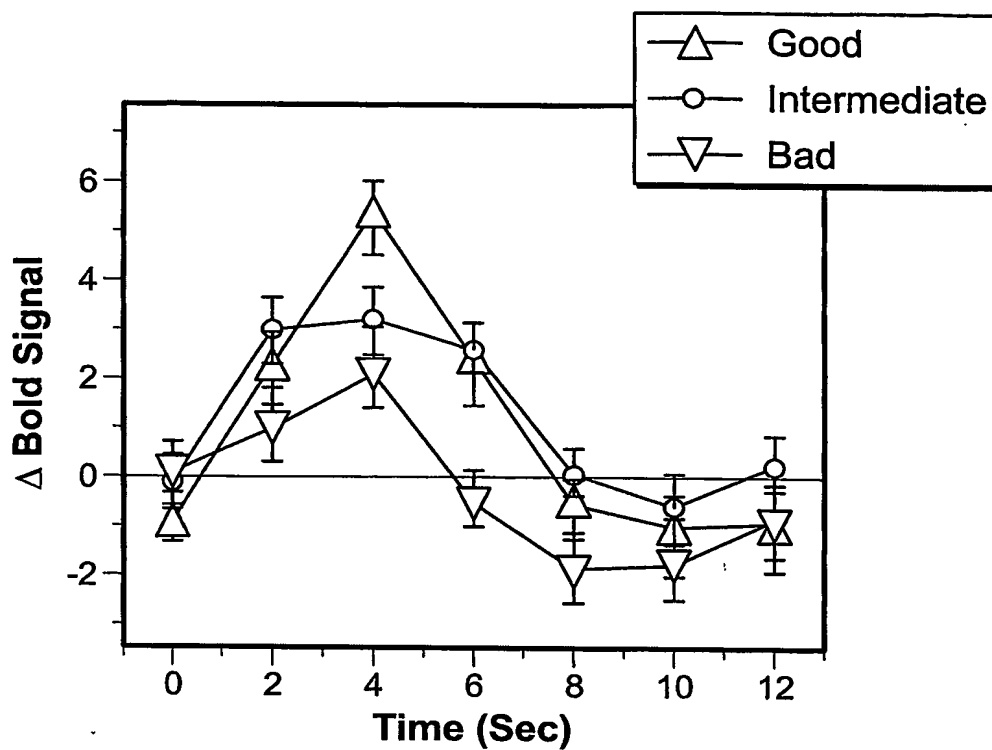


FIG. 9A

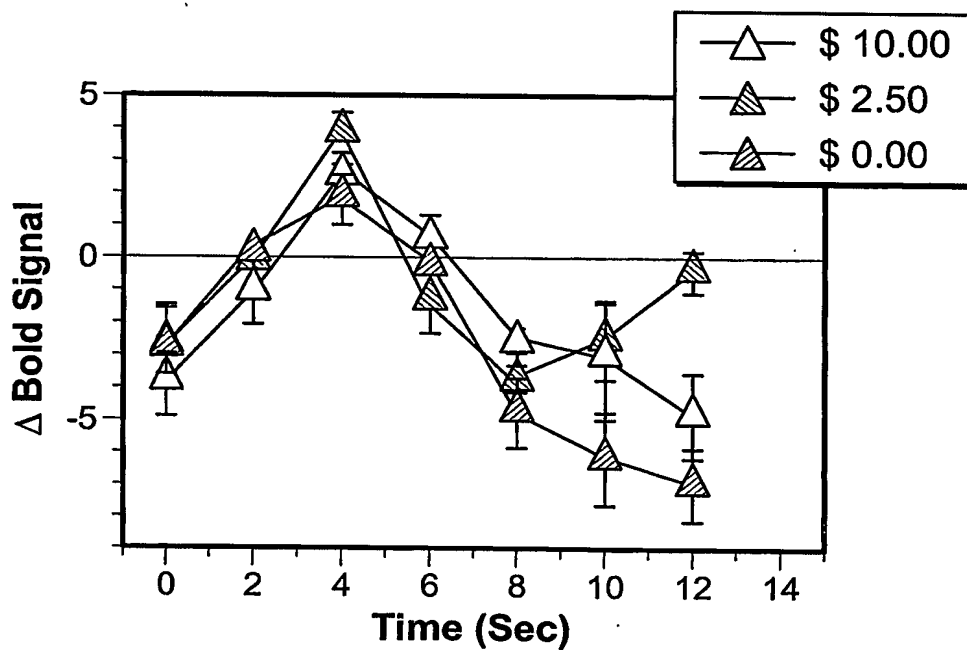


FIG. 9B

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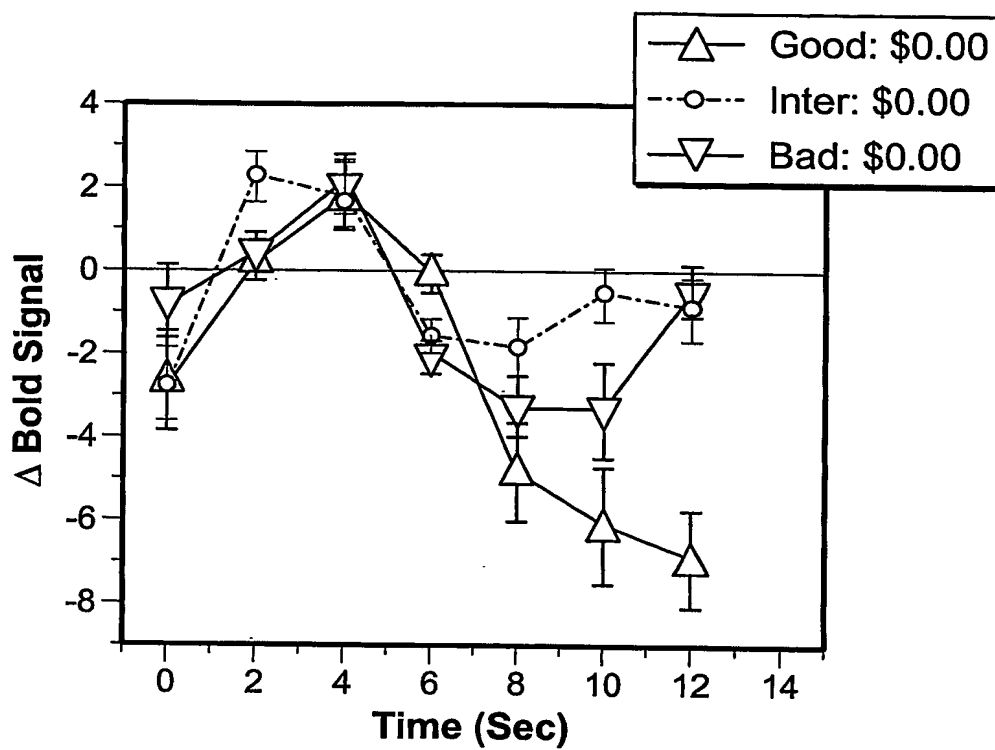


FIG. 9C

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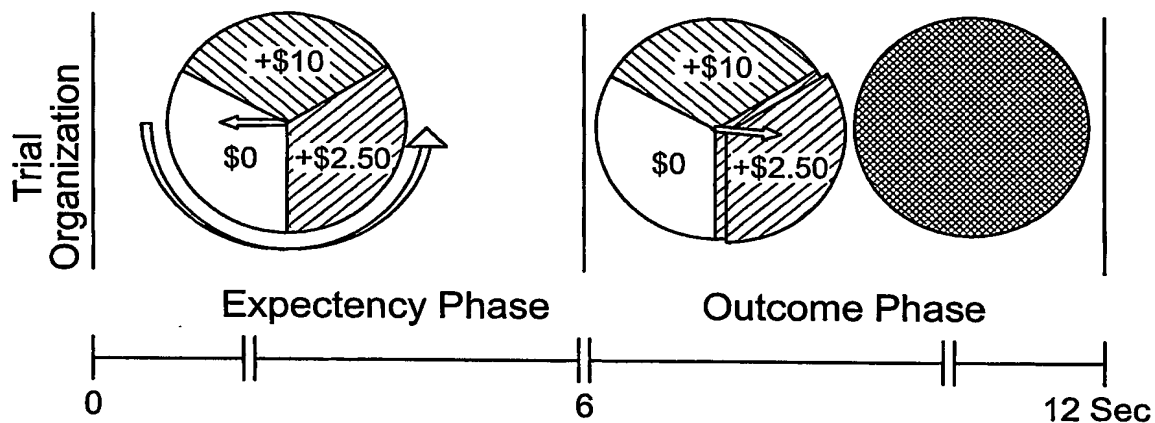


FIG. 9D

3 Types of Spinner

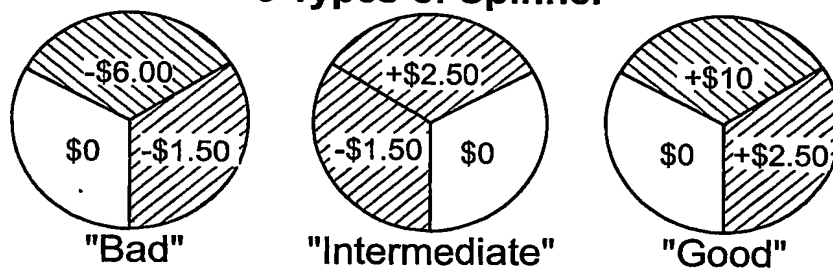


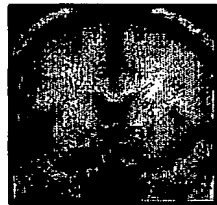
FIG. 9E

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Expectancy			Outcomes				
Region	Cocaine	Monetary Reward	Region	Cocaine	Monetary Reward	Beauty	Pain
GOB	R		GOB	(1) X	(2) X ³	(+) X ²	(-) X ²
	L	X ²		X	X ³		
NAC	R	X	NAC	X	X	X (X)	X
	L	X		X		X	X
SLEA	R	X	SLEA	(X) X	X	(X)	X
	L			X		X	
Amygdala	R		Amygdala	(X) X	X	(X)	(X)
	L	X		X	X		
VT	R		VT	X	X	(X) X	X
	L			X	X		X

FIG. 10A

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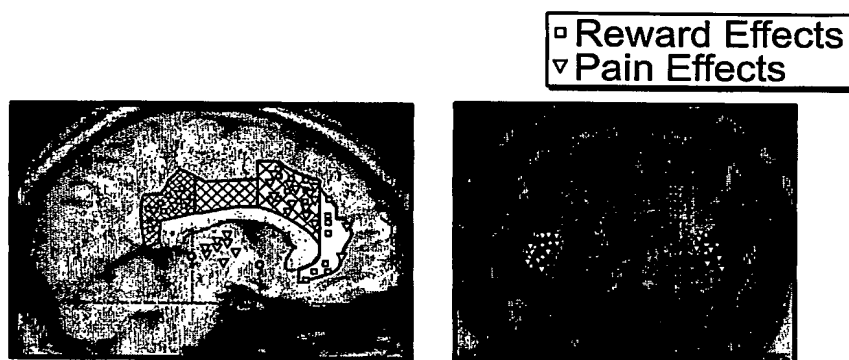
Monetary
Expectancy



Cocaine
Expectancy

FIG. 10B

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Reward and Pain in aCG, INS, Thal

FIG. 10C

Consolidated Reward Studies in Healthy Subjects

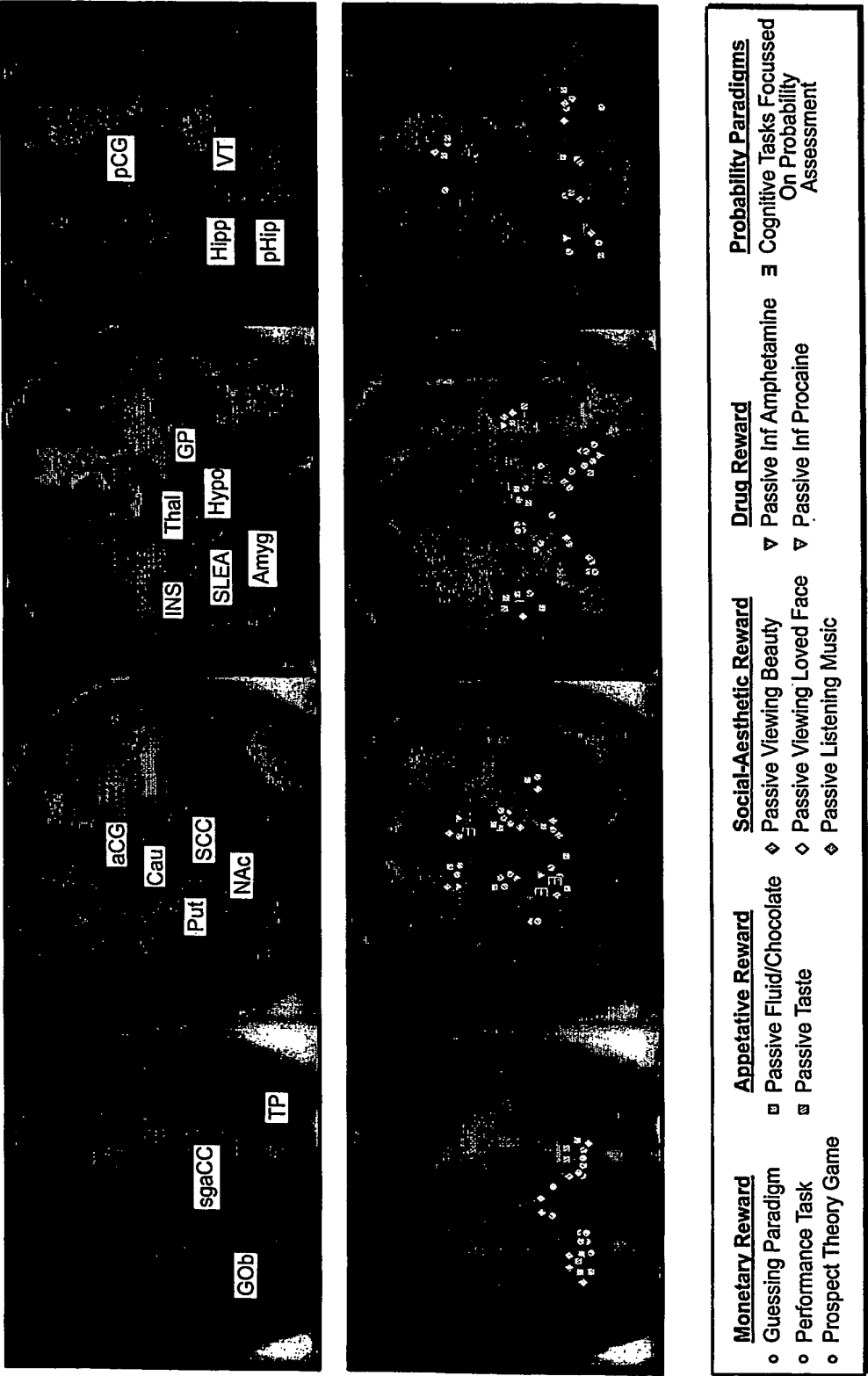
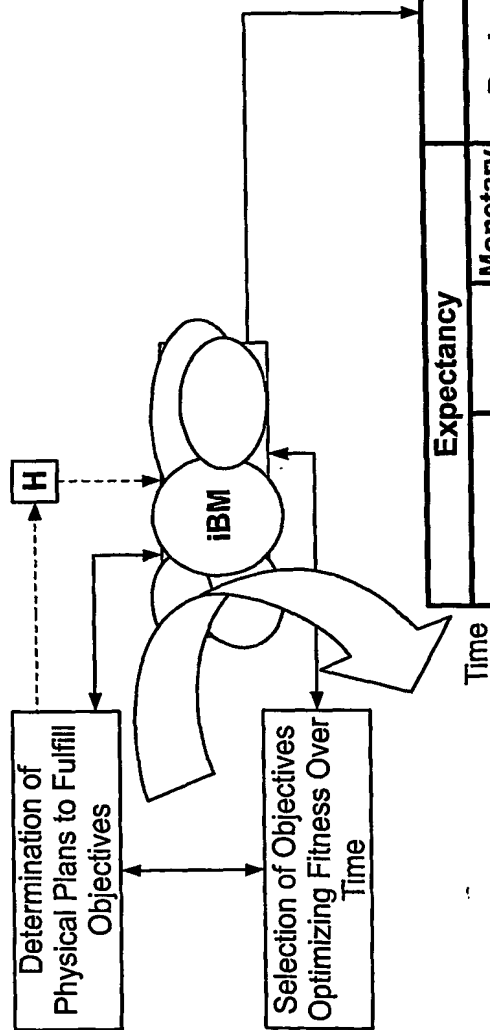


FIG. 11

Systems Biology Map



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Expectancy			Outcomes				
Region	Cocaine	Monetary Reward	Region	Cocaine	Monetary Reward	Beauty	Pain
GOB	R		R	(1) X	X ³	(+) X ²	(-) X ²
	L	X ²	L	X	X ³	(-) X ²	
NAC	R	X	R	X	X	X (X)	X
	L	X	L	X	X	X	X
SLEA	R	X	R	(X) X	X	(X)	
	L		L	X		X	
Amygdala	R		R	(X) X	X	(X)	(X)
	L	X	L	X	X		
VT	R		R	X	X	(X)	X
	L		L	X	X	X	X

FIG. 12

**Circuit-Based Differences Allude
to Endophenotype Variations in Functional Illness**

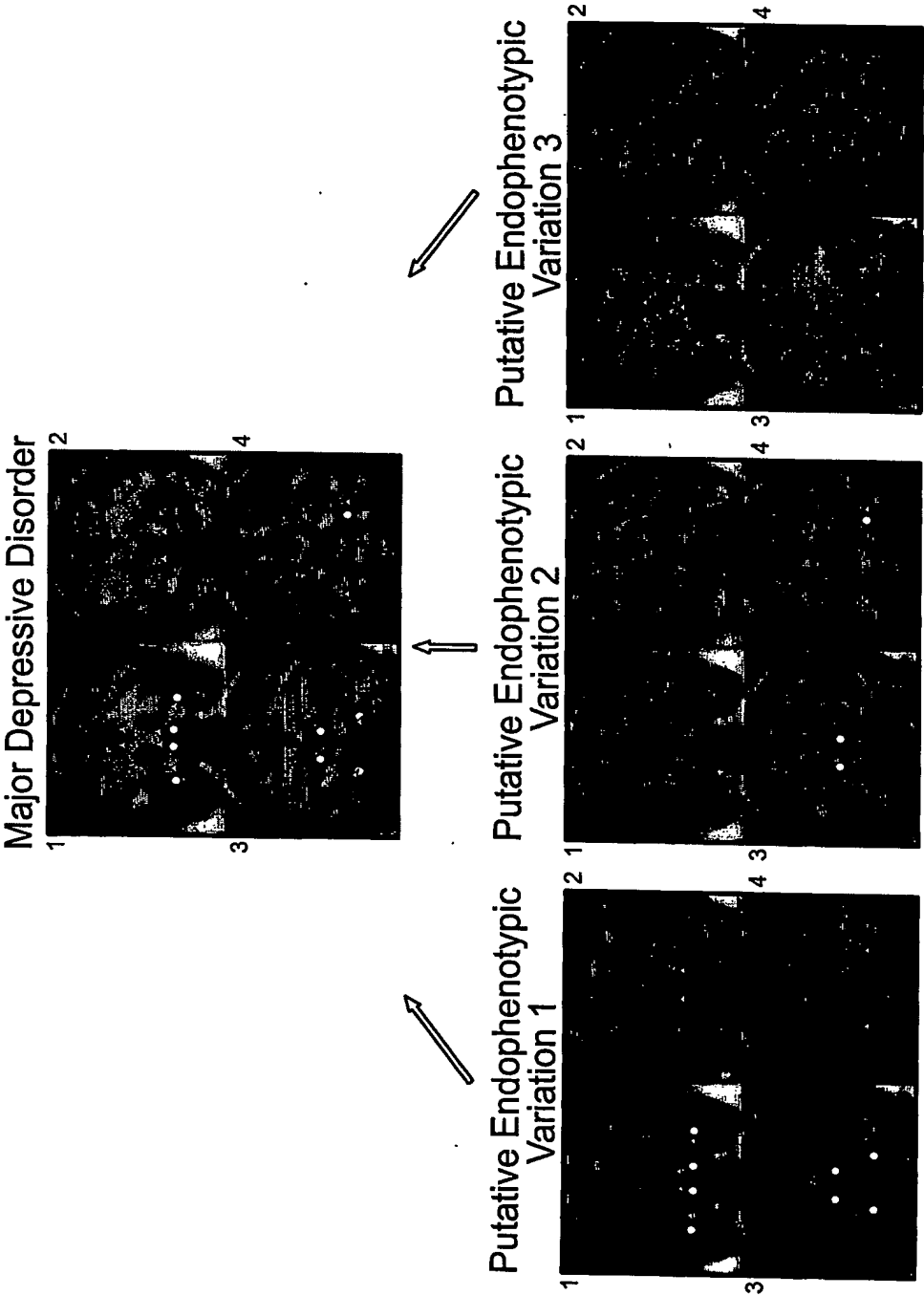
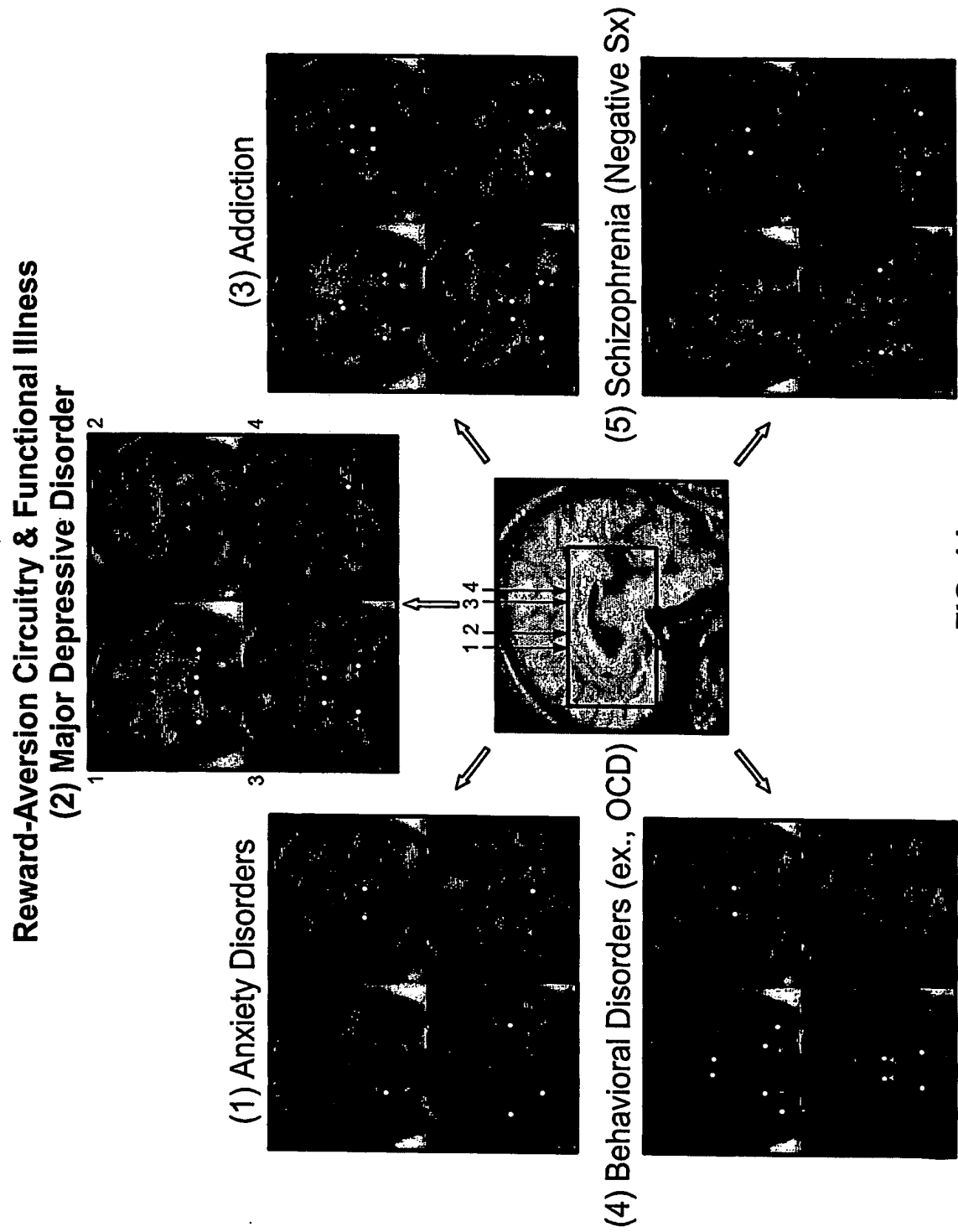


FIG. 13



Top-Down Approach (Phenotype to Genotype):

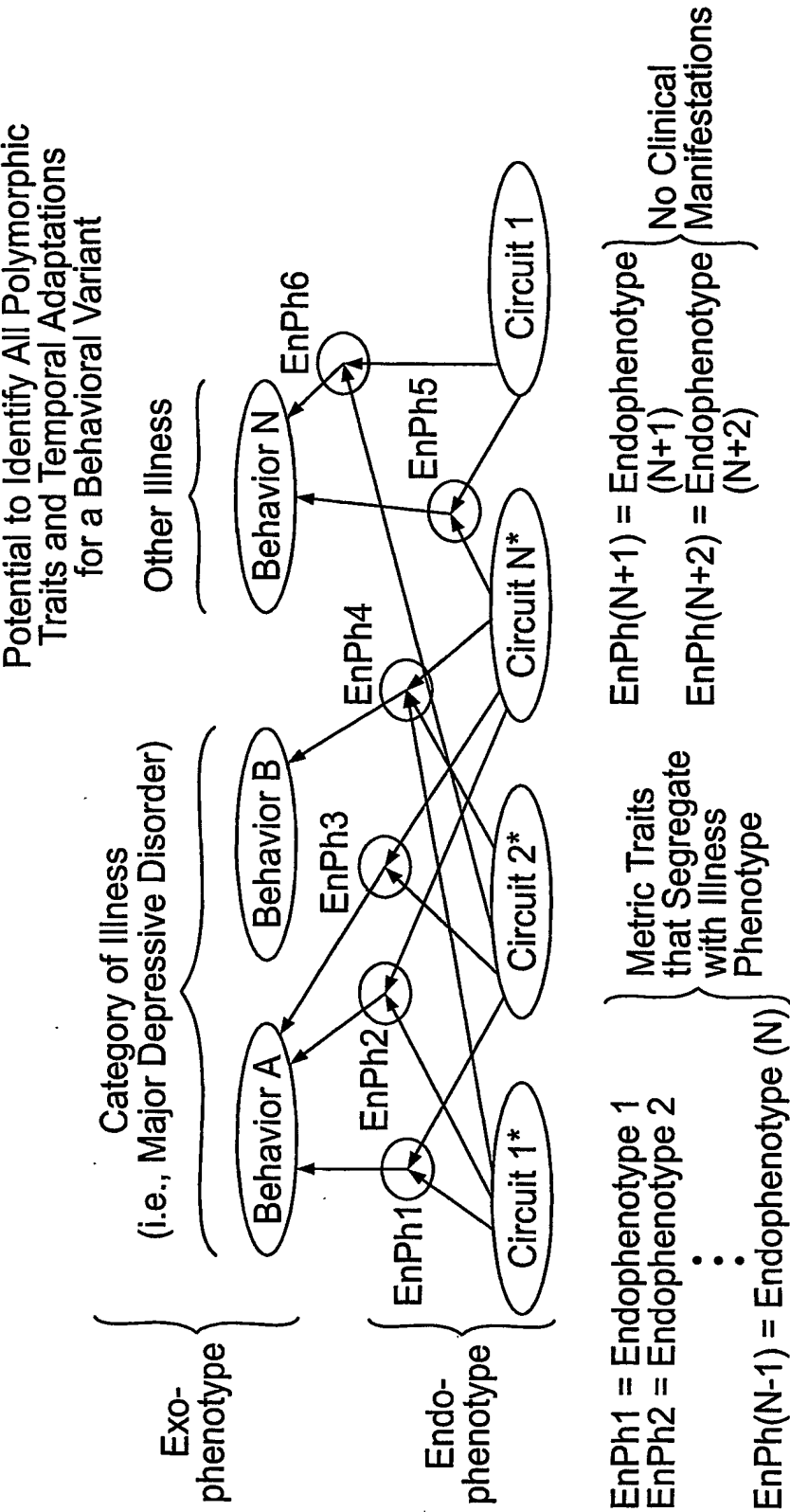


FIG. 15

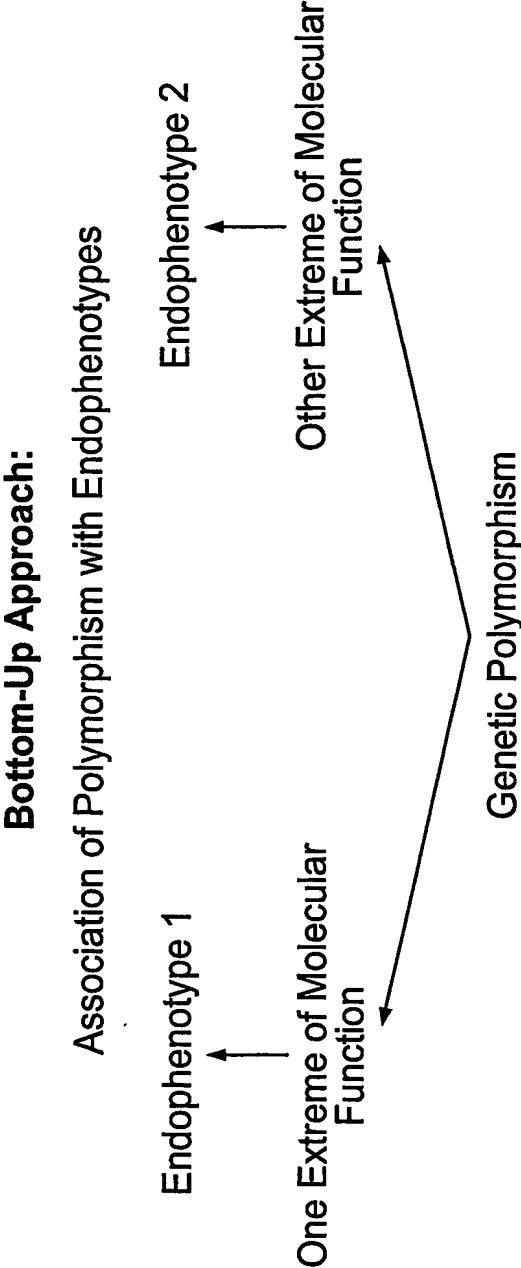


FIG. 16

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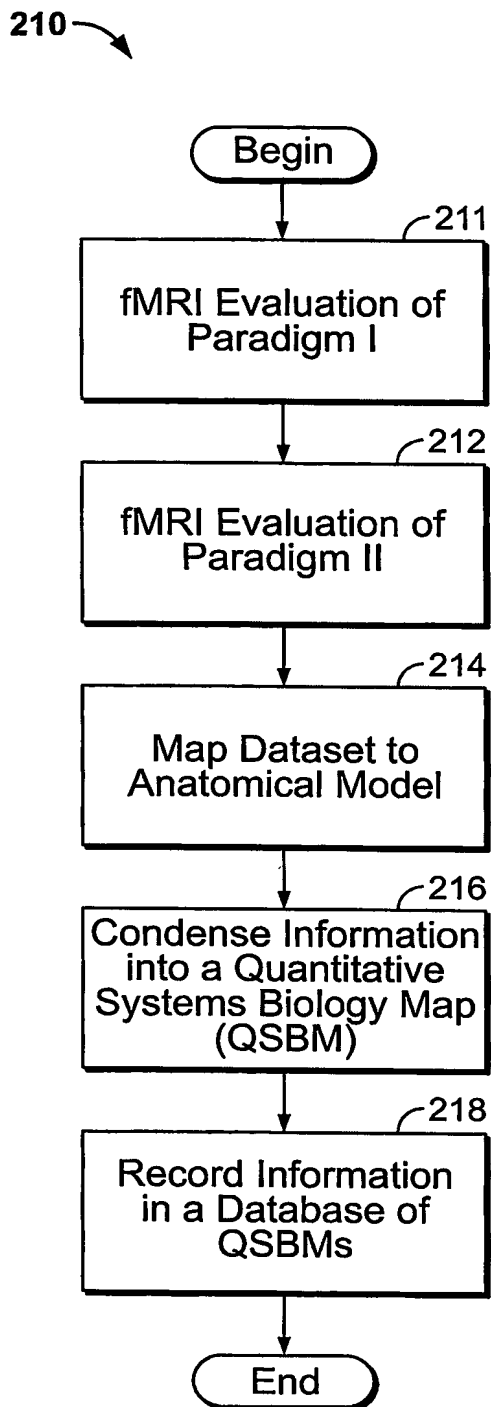


FIG. 17

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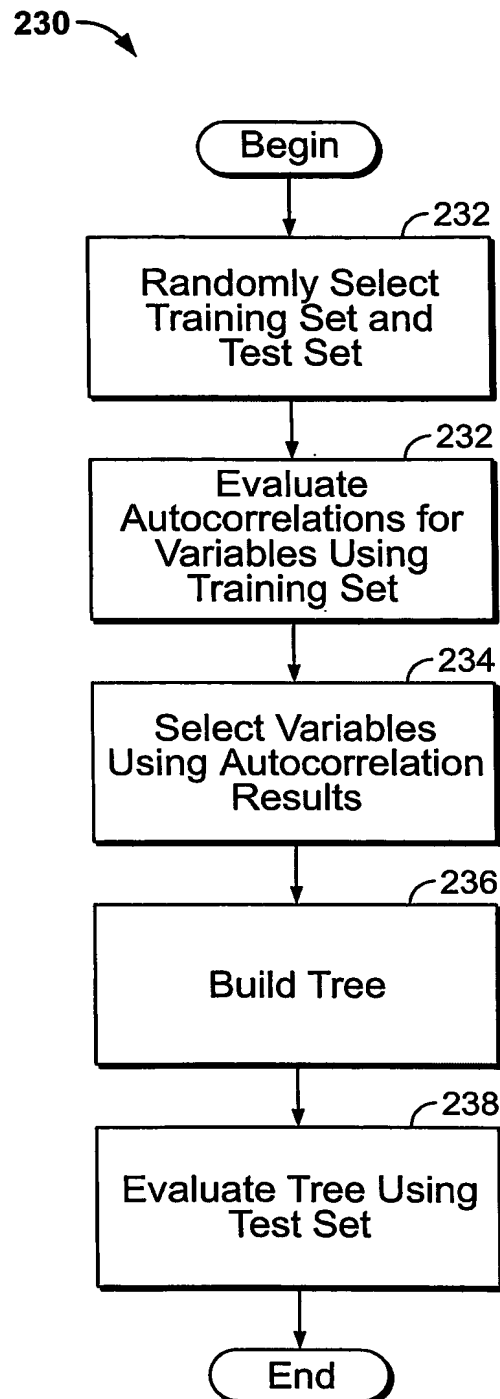


FIG. 18

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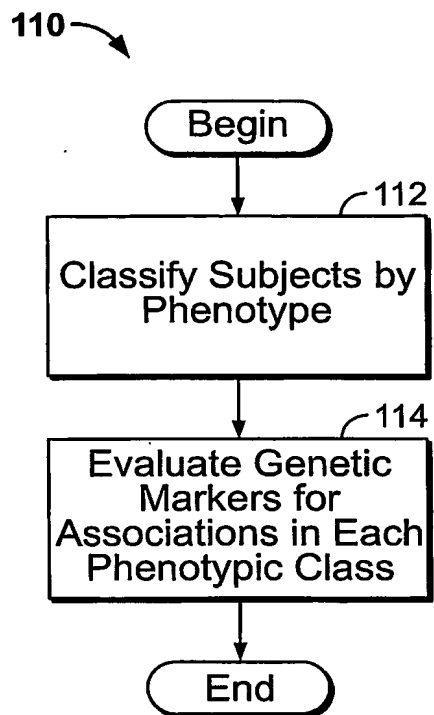


FIG. 19A

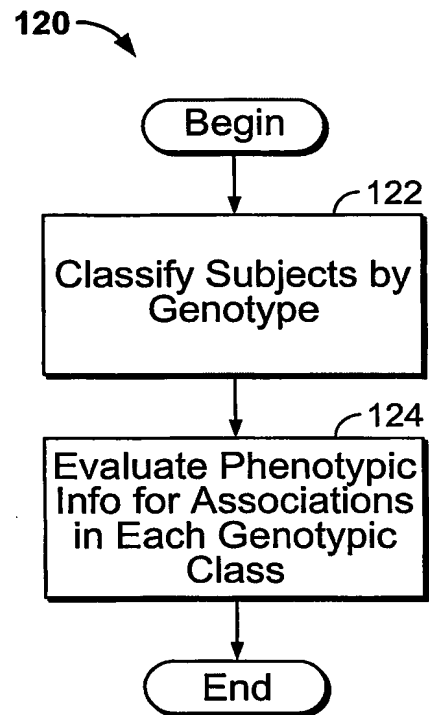


FIG. 19B

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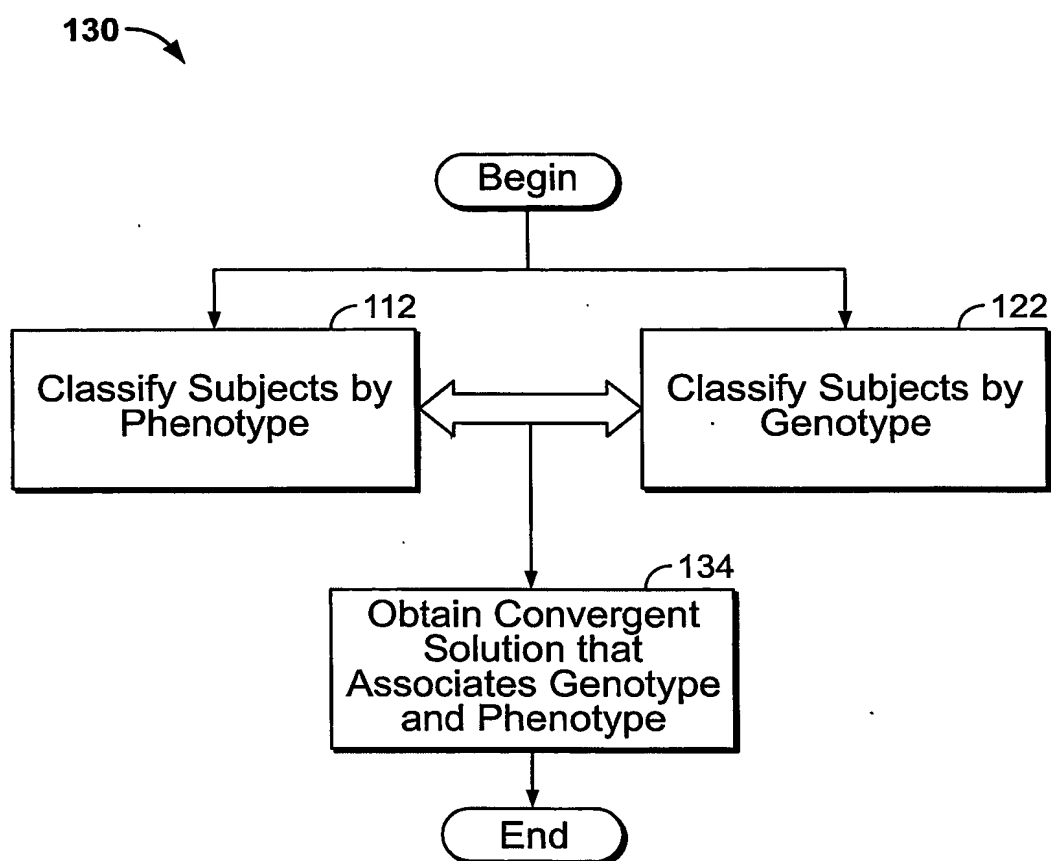


FIG. 19C

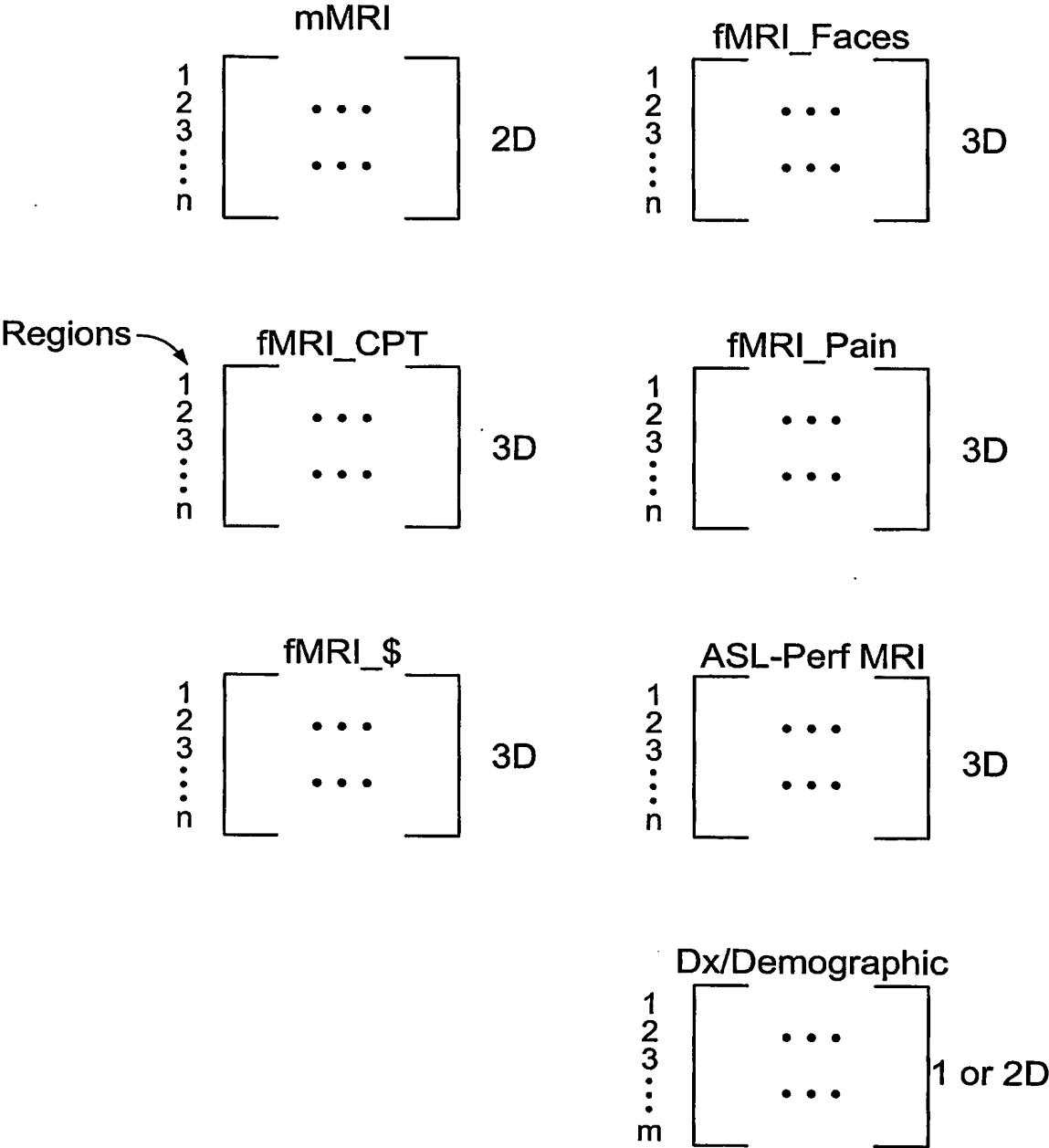


FIG. 20

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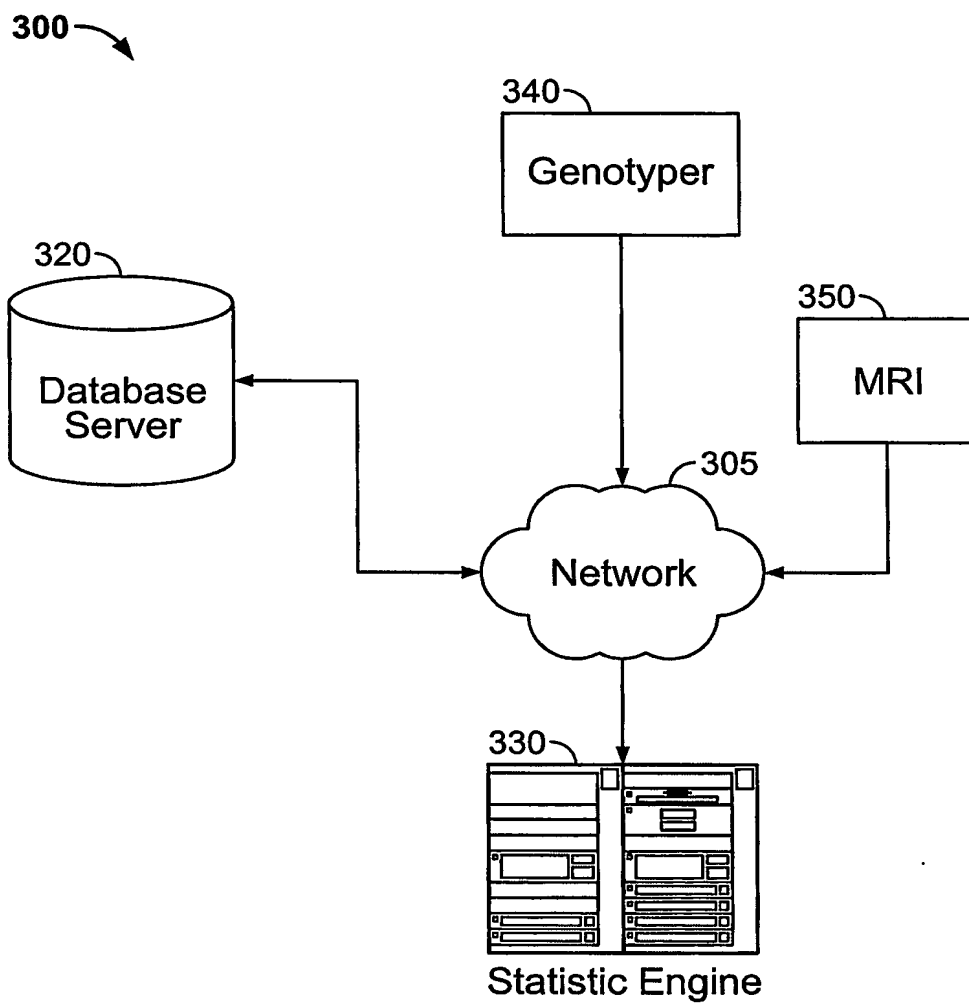


FIG. 21

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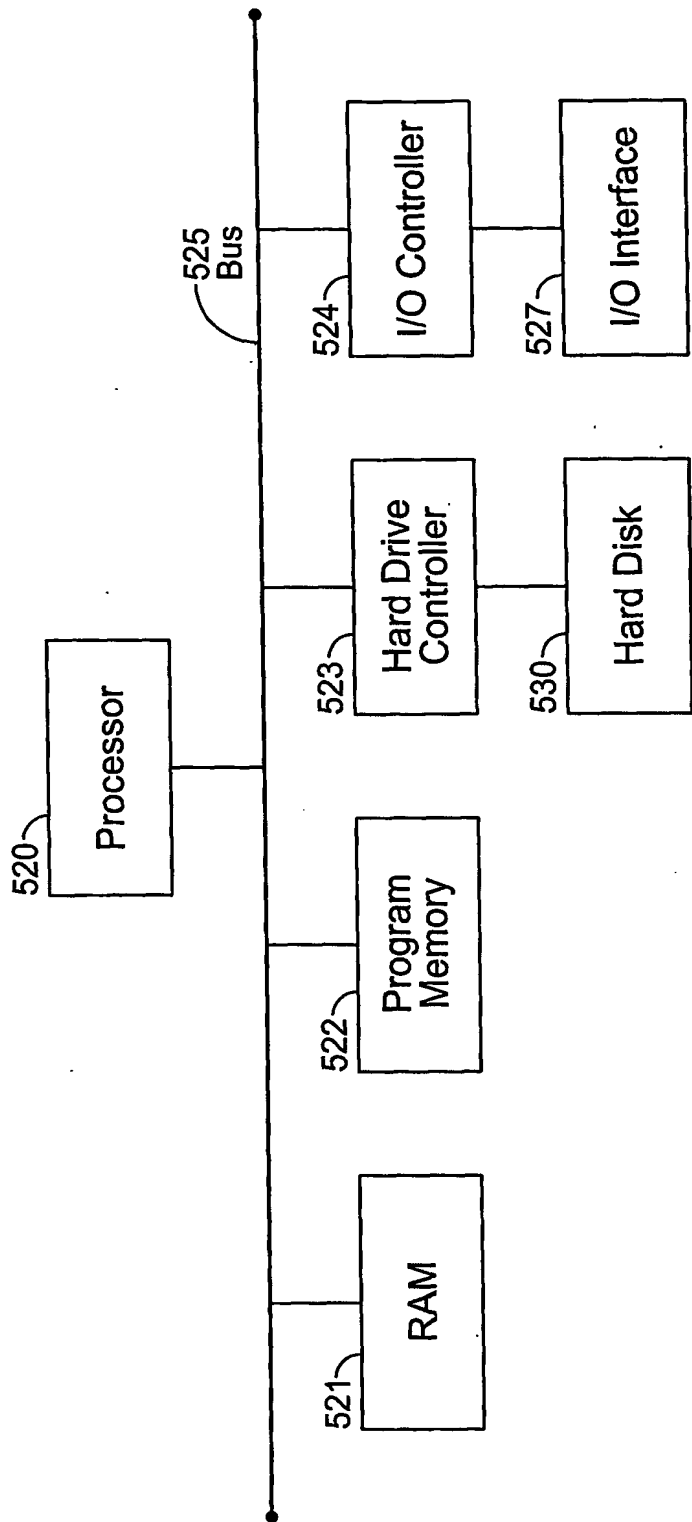


FIG. 22

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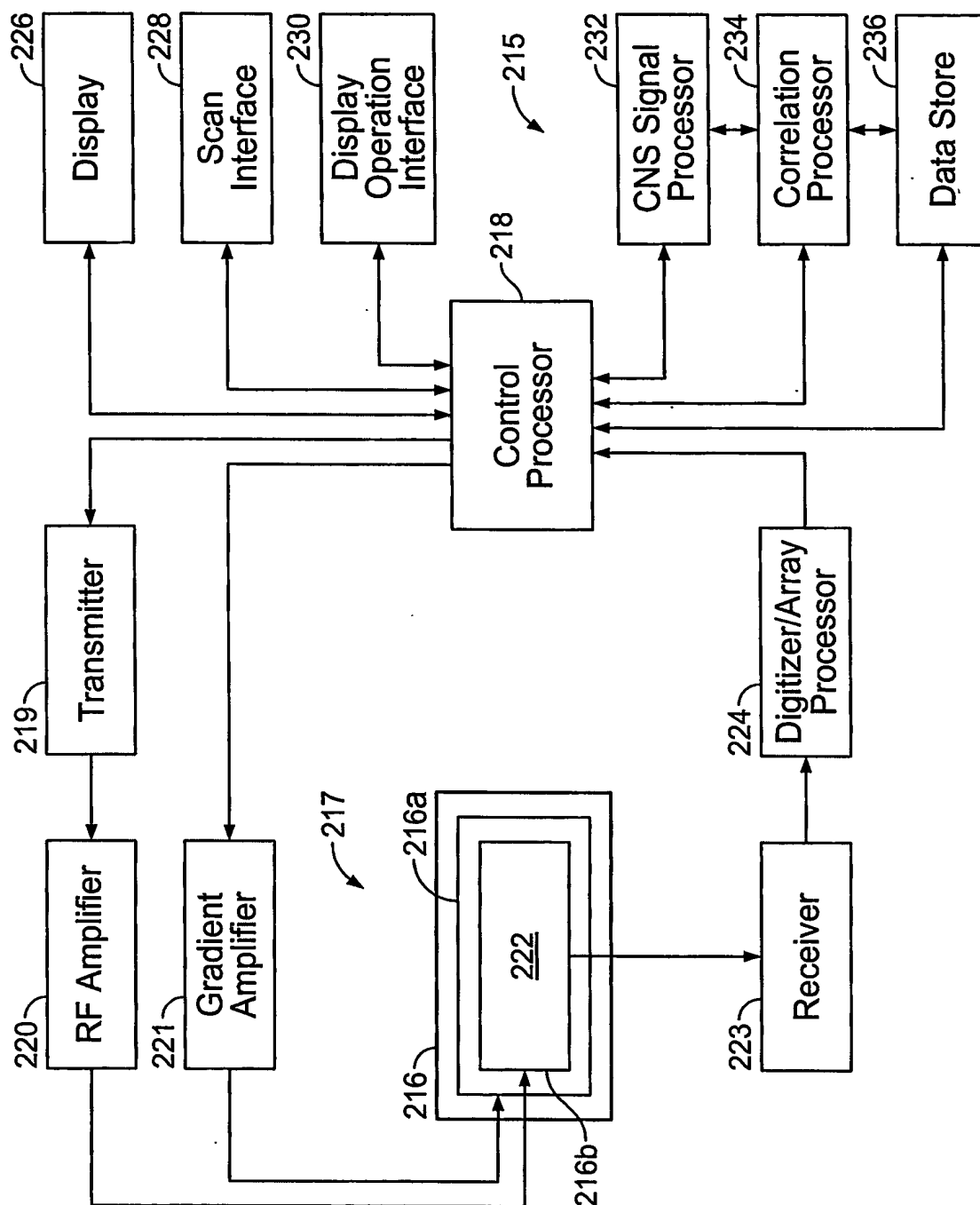


FIG. 23

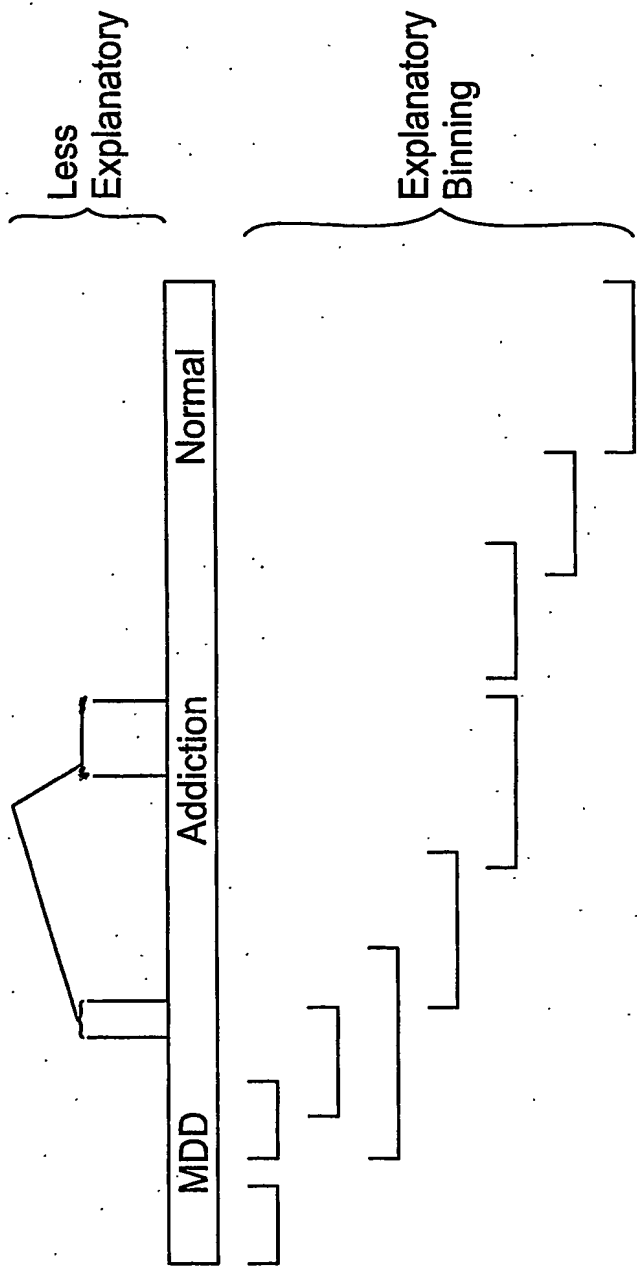


FIG. 24

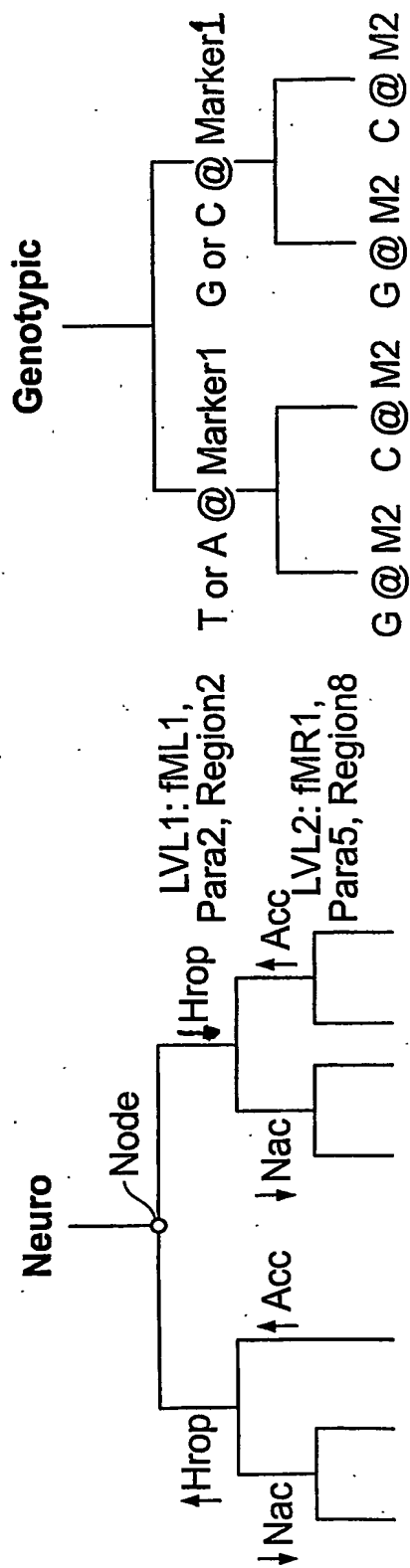


FIG. 25